

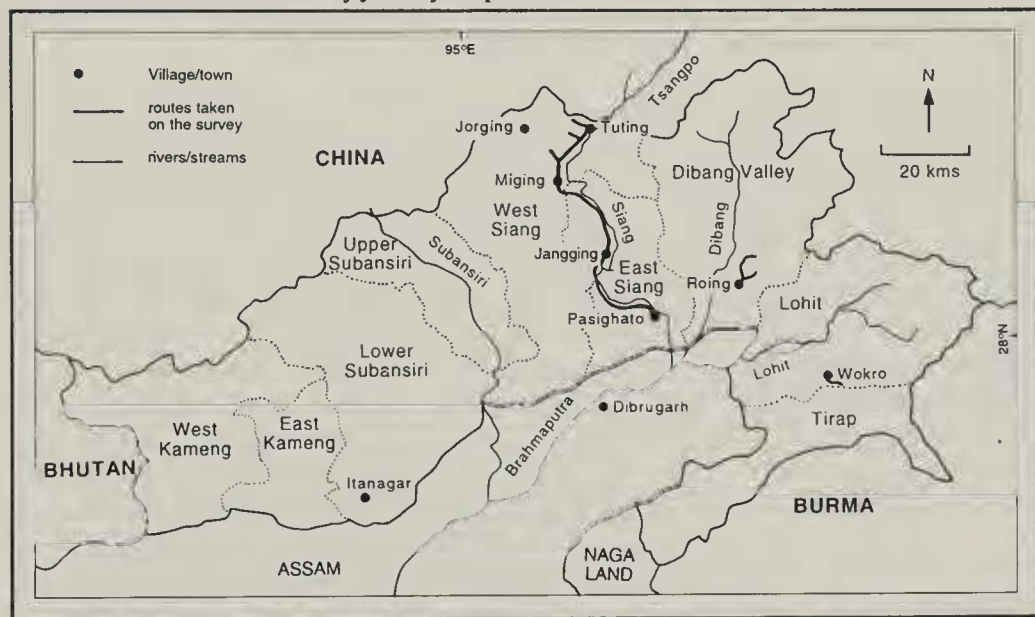
An Ornithological Survey in Eastern Arunachal Pradesh, India

MADHUSUDAN KATTI, PRATAP SINGH,
NIMA MANJREKAR, DIWAKAR SHARMA
and SHOMITA MUKHERJEE

The rich avifauna of the eastern Himalayas of India has not been well studied. We present results from a three month survey of three areas in eastern Arunachal Pradesh, north-eastern India. 215 species were recorded and are listed in an Appendix. The general distributional patterns of the avifauna are described. Finally, current human-induced threats to the forests and the conservation outlook for birds are discussed.

The Eastern Himalayas are known to contain an extraordinary diversity of bird species (Ali and Ripley 1983), but apart from a general summary (Ali 1978) there are very few detailed published accounts of its avifauna (Ali and Ripley 1948, Ripley *et al.* 1991). From January to April 1990, we conducted a wildlife survey in three eastern districts of Arunachal Pradesh. The survey, conducted on behalf of the Wildlife Institute of India, was primarily aimed at determining the distribution of Takin *Budorcas taxicolor*, and a more general documentation of mammal and bird species occurring in the areas. The survey covered several locations in and around three newly established protected areas: Mouling National Park in Siang Valley, Mehao Wildlife Sanctuary in Dibang Valley district and Kamlang Wildlife Sanctuary in Lohit district (Figure 1). Our survey represents one of the first attempts to

Figure 1. Map of Arunachal Pradesh, north-eastern India, showing the routes taken by the Wildlife Institute of India Survey January – April 1990.



document the diverse fauna of these areas. We found significant and increasing pressures on these forests from logging interests as well as the needs of indigenous tribal populations that are growing rapidly. A complete account of the expedition and our findings are reported in Katti *et al.* (1990). Here we present our ornithological observations.

METHODS

The three main survey areas are shown in detail in Figures 2a (Siang Valley), 2b (Mehao) and 2c (Kamlang). In Siang Valley, we followed the west bank of the Siang river. The total survey time in each of the areas was as follows:

Siang Valley: 22 days

Mehao Wildlife Sanctuary: 20 days

Kamlang Wildlife Sanctuary: 5 days

A more detailed description of the survey routes and procedures can be found in Katti *et al.* (1990). Birds were observed during foot-transects along regular paths or hunting trails. A daily log was maintained of all the birds observed throughout the survey. This consisted primarily of a list of species seen, the altitude and habitat in which the sighting was made, and an abundance ranking. In addition, in Mehao W.L.S., we conducted mist-netting at two localities, for a total of 177 mist-net hours. Four mist-nets were opened from dawn till afternoon, when bird activity declined considerably. Logistical problems, especially due to the frequent rainfall precluded more extensive use of mist-netting. In this account we follow King *et al.* (1975) and Ali and Ripley (1983) for nomenclature.

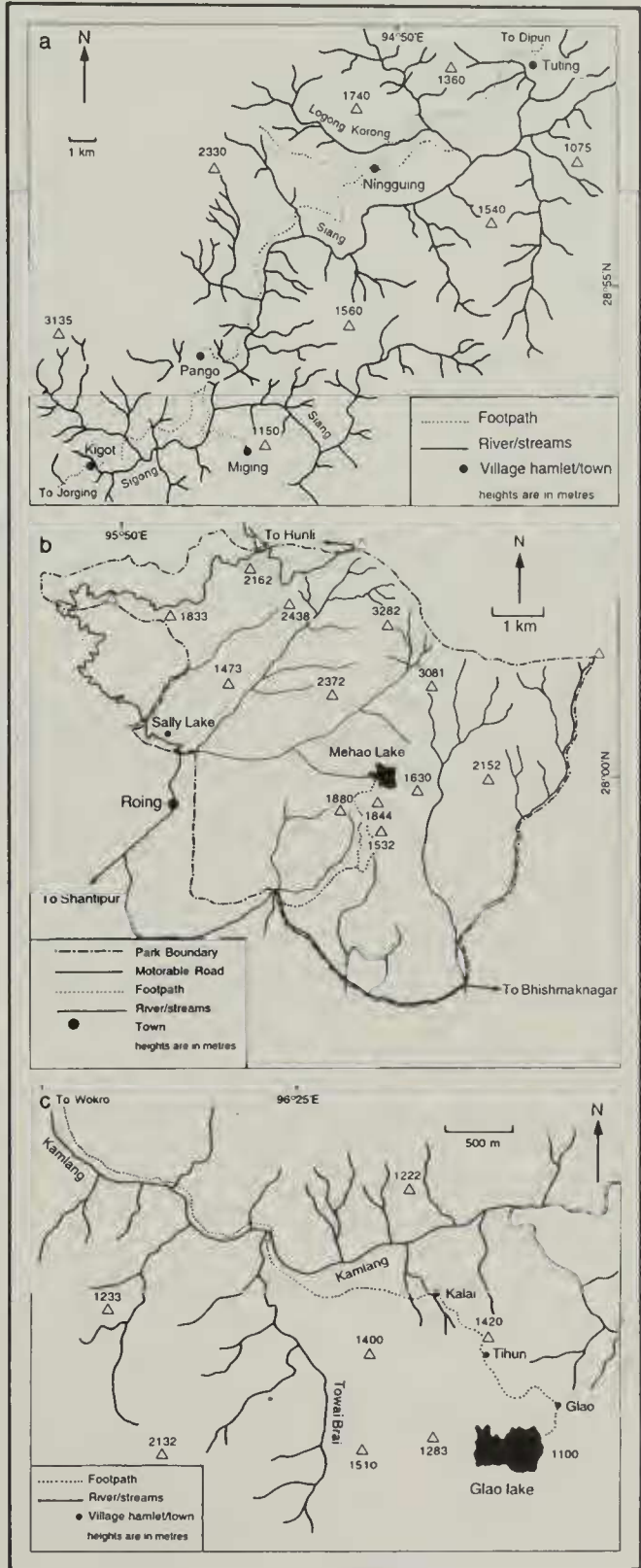
DISTRIBUTIONAL PATTERNS

We recorded a total of 215 species belonging to 46 families in the three survey areas. These are listed in the Appendix. The family Timaliidae appears to be the most dominant (44 species) followed by the Turdidae (20 species) and the Sylviidae (19 species).

We recorded 165 species in Mehao Wildlife Sanctuary, 116 in Siang Valley and 102 in Kamlang Wildlife Sanctuary. These differences include a bias due to unequal sampling periods in each of the three areas. Yet, there are substantial differences in species composition. The three regions cover rather distinct geographical zones separated by major rivers, which mark distributional boundaries for many species (Ali and Ripley 1983). Siang Valley represents the area to the west of Siang river, Mehao lies in the Mishmi hills between the Siang and Lohit rivers, while Kamlang lies south of the Lohit river, and just north of Namdapha National Park (Ripley *et al.* 1991). In Siang Valley, the survey focussed on the interior valley, well away from the outer ranges, and closer to the Tibetan plateau. Mehao Wildlife

Figure 2. Maps of the three main survey areas in eastern Arunachal Pradesh.

- a. Siang Valley;
- b. Mehao Wildlife Sanctuary;
- c. Kamlang Wildlife Sanctuary.



Sanctuary spans the outermost ridges of the Mishmi hills and extends to the edge of the Assam plains. Both these areas lie north of the Brahmaputra basin, in the part of the Himalayan range that runs in a general east-west direction. In contrast, Kamlang lies along the south-east flank of the Brahmaputra basin, and the mountain range here runs southwards into Burma. These geographical differences lead to differences in the amount of precipitation, with Kamlang receiving the greatest amount, followed by Mehao, while interior Siang valley receives the least. Vegetational differences between the three areas are yet to be quantified, but to our eyes they appeared quite distinct. Only 55 of the species recorded occurred in all the three areas, while a number of species were recorded in one area only: 21 in Siang, 64 in Mehao and 17 in Kamlang. This suggests considerable species diversity in the area as a whole, but the pattern needs to be substantiated through more detailed studies.

An important factor affecting bird observation is the density of vegetation, especially in the understorey, which reduces bird detectability considerably. The brief amount of mist-netting that we were able to do (177 mist-net hours) resulted in five new species being added to the list (marked with an * in the Appendix), emphasizing the utility of mist-net sampling for understorey species.

The altitudinal distribution of the avifauna is shown in Figure 3. There appears to be a sharp decline in number of species as one goes up the mountainside. Most species (174) occur below 1,000 m, and only 12 span the entire altitudinal range. The mist-net samples at Mehao also show a similar pattern: at Sally Lake (500 m), 75 mist-net-hours yielded 45 birds of 12 species, whereas at Mehao Lake (1,600 m), 102 mist-net-hours resulted in a sample of only 10 birds of 3 species. The survey was carried out during winter, when most of the birds move down to lower altitudes. We observed snow at altitudes of 2,300 m and above. Many of the species recorded are thought to breed at higher altitudes during the summer, while many others

Figure 3. Altitudinal distribution of bird species in eastern Arunachal Pradesh, India. January – April 1990. This is the pattern during winters.

Altitude	Species	Species Overlap
2700m	30	} 14
2000m	67	
1000m	174	} 43
200m		
		} 12

Table 1. Distribution of bird species among the major habitat types in eastern Arunachal Pradesh. January – April 1990.

Habitat Type	Exclusive Species	Total Species
1. Primary Forest, Tropical	36	103
2. Primary Forest, Temperate	3	22
3. Secondary Forest/Edge	29	111
4. Rhododendron/Bamboo Scrub	10	22
5. Jhum/Agriculture/Habitation	23	45
6. Water Body (river, lake)	19	20

migrate out of the area during the winter (Ali and Ripley 1983). Thus the year-round avifaunal diversity is undoubtedly much higher than recorded in this survey, and the summer distribution will likely be very different. These results must therefore be viewed as preliminary.

A simple classification of habitat types allows a preliminary examination of some of the ecological patterns in species distributions (Table 1). Mature (or primary) tropical forest (103 species), and secondary forest or edge (111 species) show the greatest species diversity. These habitats are also in the lower altitudinal zone (below 1,500 m). By contrast, temperate forest and the higher altitude (over 2,000 m) rhododendron / bamboo scrub had the lowest diversity (22 species each). Further, over half the observed species (120) were seen in one habitat only, suggesting a high degree of specialization in the avifauna. An additional 8 species were seen only in mature forest (tropical or temperate). Thus, 76 species are restricted to primary, relatively undisturbed habitats (1, 2, 4 and 6) only, while another 43 species tolerate some level of disturbance, occurring also in secondary scrub. In contrast, only 11 species occur in more than two distinct habitats. This suggests that the species assemblages of forested versus deforested habitats are quite distinct, and the latter species are expected to expand in range and abundance if current deforestation trends continue.

A surprising feature was the absence of any green pigeons *Treron* and only two sightings of frugivorous columbids: Mountain Imperial Pigeon *Ducula badia* and Ashy Wood-pigeon *Columba pulchricollis*. The same holds true for hornbills: only two species were recorded in 5 sightings. This paucity of frugivores was perhaps due to the winter being a lean season for fruit, and these frugivores may have moved to other areas. The movements of these birds is not very well known and many columbids are thought to be "nomadic wanderers" (Ali and Ripley 1983).

Finally, we discuss two noteworthy records:

Wedge-billed Wren-Babbler *Sphenocichla humei*: This is one of the least known Indian species, and has been collected only three times in this century, in 1905 by Stevens (1914), in 1938 by Lightfoot (1940) and in 1988 by Ripley *et al.* (1991). Ripley *et al.* (1991) state that their efforts to find free-ranging birds in the forest failed. We observed two of these birds on 14 February 1990, on Abango ridge in Mehao Wildlife Sanctuary at an

altitude of 1,200 m (see Figure 2b). They were foraging in bamboo understorey of mature tropical forest (about 2 feet above the ground), as part of a mixed flock with several Coral-billed Scimitar-Babblers *Pomatorhinus ferruginosus* and a pair of Red-faced Liocichlas *Liocichla phoenicea*. The thick conical bills and scaly appearance make this species quite distinctive and we were also able to observe them for many minutes, allowing us to confirm their identity.

White-throated Dipper *Cinclus cinclus*: We observed a single individual on the bank of Siang river below Pango village (see Figure 2a), at an altitude of 400 m for three consecutive days. This is a new low altitude record for this species in the Indian subcontinent, as it has never been recorded below 2,000 m (Ali and Ripley 1983).

CONSERVATION OUTLOOK

The two main pressures affecting bird populations in Arunachal Pradesh are habitat destruction and hunting. This region has the highest forest cover of any state in India, supposedly over 60% (F. S. I. 1989), yet, the pace of logging (largely selective, but also some clear-cutting) is quite alarming. Selective logging takes place both legally (in Reserve Forests) and illegally, even inside Wildlife Sanctuaries. Logging is particularly severe in low altitude areas close to roads. More inaccessible forests of higher altitudes are safe for the moment, but with the high level of deforestation in the rest of India, and the pace of development activities such as road construction in Arunachal Pradesh, they may not remain so for long. Such development activities are also bringing in people from outside the state who put additional pressure on the forests through fuelwood collection and hunting.

A second factor of habitat destruction is native agriculture. The many tribal populations that inhabit Arunachal's forests subsist largely on shifting cultivation (called *jhum*) and hunting. As tribal populations have nearly doubled in the last two decades, the intensity of forest clearing for *jhuming* has increased even as the fallow period in the *jhum* cycle has reduced from 30 years to about 5 years (Ramakrishnan *et al.* 1981). Most of the tribal populations in eastern Arunachal Pradesh are restricted to areas below 1,200 m. Thus, the activities of tribals affect the lower tropical forests most.

Many species of vertebrates are hunted for food in Arunachal Pradesh. This hunting is largely by the native tribal populations and is perhaps not a major threat for most birds. However, hunting pressures were found to be particularly severe in foothill forests near villages, particularly with the increase in non-tribal populations accompanying road and other construction activities. Larger birds such as hornbills, pigeons, pheasants and waterfowl are the worst hit by hunting. This is at least part of the reason for the paucity of larger frugivores and pheasants in our observations.

All the above pressures are most intense in the forests below 1,000 m. We have shown above that it is these very habitats that are the richest in bird species diversity. The lower forests are also known to be very rich in

mammalian, particularly primate (personal observations), and plant species diversity (Rau 1974, Sahni 1981, Jain 1982). The richest habitats in Arunachal are thus also the most threatened. Since the lower forests also support many altitudinal migrants during the winter months, loss of these habitats is likely to also severely threaten the higher altitude avifaunas. Current conservation measures are quite inadequate in dealing with these pressures, and there is every need to increase research and protection efforts if loss of some species is to be prevented in the near future.

We are grateful to G. S. Thapliyal, Chief Wildlife Warden, Arunachal Pradesh and staff of the Arunachal Forest Department for their cooperation and logistical assistance during the survey. We are also grateful to H. S. Panwar, Director, Wildlife Institute of India for sponsoring the survey and for institutional support. Finally, we thank A. J. T. Johnsingh, G. S. Rawat and W. A. Rodgers of the Wildlife Institute of India for their encouragement and critical contribution to the survey. Trevor Price made valuable comments on the manuscript.

REFERENCES

- Ali, S. (1978) *Field guide to the birds of the Eastern Himalayas*. Bombay: Oxford University Press.
- Ali, S. and Ripley, S.D. (1948) The birds of the Mishmi hills. *J. Bombay Nat. Hist. Soc.* 48: 1-37.
- Ali, S. and Ripley, S. D (1983) *Handbook of the birds of India and Pakistan*. Compact edition Bombay: Bombay Natural History Society and Oxford University Press.
- Forest Survey of India (1989). *The state of forests report*. Dehradun: Forest Survey of India, Government of India, Ministry of Environment and Forests.
- Jain, S. K. (1982) Botany of Eastern Himalayas. pp. 194-200. In G. S. Paliwal (ed.), *The vegetational wealth of the Himalayas*. Delhi: Puja Publications.
- Katti, M., Manjrekar, N., Mukherjee, S. and Sharma, D. (1990) A report on wildlife survey in Arunachal Pradesh with special reference to Takin. Unpublished Report. Dehradun: Wildlife Institute of India.
- King, B. F., Dickinson, E. C. and Woodcock, M. W. (1975) *A field guide to the birds of South-East Asia*. London: Collins.
- Lightfoot, G. S. (1940) On the occurrence of Hume's Wedge-billed Wren (*Spehociichla humei Mandelli*) in the Aka Hills, Assam. *J. Bombay Nat. Hist. Soc.* 41: 418-420
- Ramakrishnan, P. S., Toky, O. P., Mishra, B. K. and Saxena, K. G. (1981) Slash and burn agriculture in north-eastern India. In H. A. Mooney, T. M. Bonnicksen, N. L. Christensen, J. E. Lotan and W. A. Reiners. eds. *Fire regimes and ecosystems*. USDA Forest Service General Technical Report WO - 26.
- Rau, M. A. (1974) Vegetation and phytogeography of the Himalaya. Pp. 247-275 in M. S. Mani, ed., *Ecology and biogeography in India*. The Hague: Dr. W. Junk Publishers.
- Ripley, S. D., Saha, S. S., and Beehler, B.M. (1991) Notes on birds from the Upper Noa Dihing, Arunachal Pradesh, Northeastern India. *Bull. Brit. Orn. Club* 111 (1): 19-28.
- Sahni, K. C. (1981) Botanical panorama of the eastern Himalaya. Pp. 32-49 in J. S. Lall, and A. D. Moddie, eds., *The Himalaya - aspects of change*. New Delhi: Oxford University Press.
- Stevens, H. (1914) Notes on the birds of upper Assam. *J. Bombay Nat. Hist. Soc.* 23: 234-268.

*Madhusudan Katti, Wildlife Institute of India, P.O. New Forest, Dehradun 248006 (U.P.), India.
Present address and address for correspondence: Department of Biology, 0116, University of California,
San Diego, La Jolla CA 92093-USA.*

Pratap Singh, C/O Chief Wildlife Warden, Arunachal Pradesh Forest Department, Itanagar, Arunachal Pradesh, India.

Nima Manjrekar, Diwakar Sharma and Shomita Mukherjee, Wildlife Institute of India, P.O. New Forest, Dehradun 248006 (U.P.), India.

APPENDIX

ANNOTATED CHECKLIST OF BIRDS SEEN IN THREE
AREAS OF EASTERN ARUNACHAL PRADESH,
NORTH-EASTERN INDIA. January – April 1990.

SPECIES	ABUNDANCE RANKING			ALTITUDE (metres)	HABITAT (see codes)
	SIANG	MEHAO	KAMLENG		
Great Crested Grebe <i>Podiceps cristatus</i>	–	3	–	1600	6
Little Grebe <i>P. ruficollis</i>	–	2	–	1600	6
Great Cormorant <i>Phalacrocorax carbo</i>	2	–	–	500	6
Little Cormorant <i>P. niger</i>	–	–	1	500	6
Little Heron <i>Butorides striatus</i>	–	–	1	1200	6
Indian Pond-Heron <i>Ardeola grayii</i>	–	–	2	400	5
Cattle Egret <i>Bubulcus ibis</i>	3	3	3	150-400	5
Ruddy Shelduck <i>Tadorna ferruginea</i>	–	3	–	1600	6
Common Teal <i>Anas crecca</i>	–	4	–	1600	6
Tufted Duck <i>Aythya fuligula</i>	3	–	–	200	6
Black-shouldered Kite <i>Elanus caeruleus</i>	–	2	–	400	5
White-rumped Vulture <i>Gyps bengalensis</i>	1	1	–	500-700	1
Long-billed Vulture <i>G. indicus</i>	–	–	1	400	3
Crested Serpent-Eagle <i>Spilornis cheela</i>	1	–	–	500	3
Northern Harrier <i>Circus cyaneus</i>	1	–	–	1100	3,5
Besra <i>A. virgatus</i>	3	3	–	150-500	5
Crested Goshawk <i>Accipiter trivirgatus</i>	3	3	–	150-500	5
Buzzard <i>Buteo spp.</i>	3	–	–	150-1100	3,5
Black Eagle <i>Ictinaetus malayensis</i>	–	2	–	500-800	1,3
Common Hill Partridge <i>Arborophila torqueola</i>	1	1	1	500-800	1
Red Junglefowl <i>Gallus gallus</i>	2	3	2	900-2400	1,2
River Tern <i>Sterna aurantia</i>	3	–	–	150	6
Mountain Imperial Pigeon <i>Ducula badia</i>	1	1?	–	600-1000	1

Rock Pigeon	3	3	2	150-500	5
<i>Columba livia</i>					
Ashy Wood-Pigeon	—	1	—	500	1,3
<i>C. pulchricollis</i>					
Oriental Turtle-Dove	2	—	3	400-800	3,5
<i>Streptopelia orientalis</i>					
Spotted Dove	—	3	3	400-500	5
<i>S. chinensis</i>					
Green-winged Pigeon	—	2	—	500	1,3
<i>Chalcophaps indica</i>					
Common Hawk-Cuckoo	—	—	2	200-800	3,5
<i>Cuculus varius</i>					
Hodgson's Hawk-Cuckoo	1?	—	1?	200-600	5
<i>C. fugax ?</i>					
Plaintive Cuckoo	—	—	1	200	5
<i>Cacomantis merulinus</i>					
Mountain Scops-Owl	—	2	2	900-1600	1,3
<i>Otus spilocephalus</i>					
Collared Owllet	3	3	3	500-1800	1,3
<i>Glaucidium brodiei</i>					
Brown Wood-Owl	—	1	—	2400	4
<i>Strix leptogrammica</i>					
Tawny Owl	—	1?	1	1200	1/2
<i>S. aluco</i>					
Nightjar	—	2	1	400-2400	1-3
<i>Caprimulgus</i> spp.					
Himalayan Swiftlet	—	2	2	1000-2400	2,3
<i>Collocalia brevirostris</i>					
House Swift	—	2	2	500	5
<i>Apus affinis</i>					
Red-headed Trogon	1	1	—	500-1600	1,3
<i>Harpactes erythrocephalus</i>					
Crested Kingfisher	—	2	—	600	6
<i>Ceryle lugubris</i>					
Pied Kingfisher	—	—	2	500-1200	5,6
<i>C. rudis</i>					
Common Kingfisher	1	—	—	150	6
<i>Alcedo atthis</i>					
White-throated Kingfisher	—	1	—	500	6
<i>Halcyon smyrnensis</i>					
Indian Roller	—	3	2	400-600	5
<i>Coracias benghalensis</i>					
Hoopoe	2	3	3	150-500	5
<i>Upupa epops</i>					
Rufous-necked Hornbill	1	—	2	500-1200	1,3
<i>Aceros nipalensis</i>					
Indian Pied Hornbill	—	—	2	400-700	1,3
<i>Anthracoceros albirostris</i>					
Great Barbet	3	3	3	400-1800	1,3,5
<i>Megalaima virens</i>					
Lineated Barbet	1	—	—	150	1
<i>M. lineata</i>					
Golden-throated Barbet	1	3	—	400-800	1,3
<i>M. franklinii</i>					
Blue-throated Barbet	3	3	3	150-600	1,3
<i>M. asiatica</i>					

Speckled Piculet	–	2	–	500-2400	1
<i>Picumnus innominatus</i>					
Grey-headed Woodpecker	2	3	2	500-2200	1,2
<i>Picus canus</i>					
Lesser Yellownappe	–	3	2	500-1000	1,3
<i>P. chlorolophus</i>					
Pale-headed Woodpecker	–	1	–	500	1
<i>Gecinulus grantia</i>					
Bay Woodpecker	1	–	1	800-1300	1,2
<i>Blythipicus pyrrhotis</i>					
Fulvous-breasted Woodpecker	–	3	2	500-800	1,3
<i>Picoides macei</i>					
Silver-breasted Broadbill	–	1	–	500	1
<i>Serilophus lunatus</i>					
Rufous-winged Bushlark	–	–	2	200	5
<i>Mirafra assamica</i>					
Nepal House-Martin	–	4	3	500-2700	1-4
<i>Delichon nipalensis</i>					
Bat-winged Flycatcher-shrike	3	3	2	500-1600	1-3
<i>Hemipus picatus</i>					
Large Wood-shrike	–	2	–	500	3
<i>Tephrodornis virgatus</i>					
Large Cuckoo-shrike	3	–	–	200	5
<i>Coracina novaehollandiae</i>					
Black-winged Cuckoo-shrike	3	3	–	500-600	3,5
<i>C. melaschistos</i>					
Rosy Minivet	–	–	1	400	5
<i>Pericrocotus roseus</i>					
Grey-chinned Minivet	1	–	–	700	3
<i>P. solaris</i>					
Long-tailed/Short-billed Minivet	2	3	2	500-900	3
<i>P. ethologus/brevirostris</i>					
Scarlet Minivet	–	2	–	500	3
<i>P. flammeus</i>					
Golden-fronted Leafbird	–	–	1	800	1
<i>Chloropsis aurifrons</i>					
Orange-bellied Leafbird	3	4	3	400-700	1,3
<i>C. hardwickii</i>					
Striated Bulbul	1	1	–	1200-1500	1
<i>Pycnonotus striatus</i>					
Red-whiskered Bulbul	4	4	4	150-900	3,5
<i>P. jocosus</i>					
Red-vented Bulbul	4	4	4	150-600	5
<i>P. cafer</i>					
White-throated Bulbul	2	3	2	500-1200	1
<i>Criniger flaveohus</i>					
Mountain Bulbul	–	1	–	1500	1
<i>Hypsipetes mccllellandii</i>					
Ashy Bulbul	3	3	–	500-1000	1,3
<i>H. flavala</i>					
Black Bulbul	3	3	3	500-1000	1,3
<i>H. madagascariensis</i>					
Black Drongo	2	3	2	200-500	3,5
<i>Dicrurus macrocercus</i>					
Ashy Drongo	1	2	–	500-700	3
<i>D. leucophaeus</i>					

Bronzed Drongo	3	3	3	400-1600	1-3
<i>D. aeneus</i>					
Lesser Racket-tailed Drongo	1	2	1	400-1000	1,3
<i>D. remifer</i>					
Spangled Drongo	—	1	—	500	3
<i>D. hottentottus</i>					
Greater Racket-tailed Drongo	1	1	1	500-1000	1,3
<i>D. paradiseus</i>					
Black-hooded Oriole	2	1	2	200-600	3
<i>Oriolus xanthonotus</i>					
Maroon	—	3	—	400-600	3
<i>O. traillii</i>					
Eurasian Jay	—	2	—	2300	2,4
<i>Garrulus glandarius</i>					
Green Magpie	2	3	2	500-1600	1-3
<i>Cissa chinensis</i>					
Gold-billed Magpie	—	2	—	2400	2,4
<i>Urocissa flavirostris</i>					
Grey Treepie	2	—	1	500	1,3
<i>Dendrocitta formosae</i>					
Collared Treepie	—	1	—	500	1
<i>D. frontalis</i>					
House Crow	3	3	3	150-600	3,5
<i>C. splendens</i>					
Large-billed Crow	3	3	3	500-1000	1-5
<i>Corvus macrorhynchos</i>					
Great Tit	2	—	—	150-600	5
<i>Parus major</i>					
Green-backed Tit	3	3	—	500-2500	3,4
<i>P. monticolus</i>					
Yellow-cheeked Tit	2	1	1	500-1600	1,3
<i>P. sibilotus</i>					
Yellow-browed Tit	—	1	—	2500	4
<i>Sylviparus modestus</i>					
Sultan Tit	2	2	—	500-800	1,3
<i>Melanochlora sultanea</i>					
Chestnut-bellied Nuthatch	2	3	—	500-800	1,3
<i>Sitta castanea</i>					
White-tailed Nuthatch	—	2	—	2400	4
<i>S. himalayensis</i>					
White-throated Dipper	1	—	—	400	6
<i>Cinclus cinclus</i>					
Brown Dipper	—	—	2	600	6
<i>C. pallasii</i>					
Northern Wren	—	2	—	2400	4
<i>Troglodytes troglodytes</i>					
Puff-throated Babbler	—	2	—	500	3
<i>Pellorneum ruficeps</i>					
White-browed Scimitar-Babbler	—	1	—	2500	4
<i>Pomatorhinus schisticeps</i>					
Red-billed Scimitar-Babbler	—	1	—	600	1
<i>P. ochraceiceps</i>					
Coral-billed Scimitar-Babbler	2	3	1	400-1600	1-3
<i>P. ferruginosus</i>					
Scaly-breasted Wren-Babbler	—	2	—	1600	1
<i>Prnoepyga albiventer</i>					

Wedge-billed Wren-Babbler	–	1	–	1200	1
<i>Sphenocichla humei</i>					
Rufous-capped Babbler	–	2	–	600-1800	1,2
<i>Stachyris ruficeps</i>					
Golden Babbler	4	4	3	500-1000	1,3
<i>S. chrysaea</i>					
Grey-throated Babbler	–	2	–	500-700	1,3
* <i>S. nigriceps</i>					
Striped Tit-Babbler	–	2	–	500-1000	1,3
* <i>Macronous gularis</i>					
White-crested Laughingthrush	2	3	2	500-800	1,3
<i>Garrulax leucolophus</i>					
Lesser Necklaced Laughingthrush	–	2	–	500	1,3
<i>G. monileger</i>					
Greater Necklaced Laughingthrush	1	–	1	150-500	1,3
<i>G. pectoralis</i>					
Striated Laughingthrush	1	1	–	1600-2200	2
<i>G. striatus</i>					
Rufous-necked Laughingthrush	3	–	–	700	3,5
<i>G. ruficollis</i>					
Laughingthrush	–	1	–	1700	1,2
<i>G. squamatus</i>					
Black-faced Laughingthrush	1	3	–	2100-2400	2,4
<i>G. afinis</i>					
Red-faced Liocichla	–	1	–	1200	1
<i>Liocichla phoenicea</i>					
Silver-eared Mesia	3	3	–	500-700	3
<i>Leiothrix argenteauris</i>					
Cutia	2	–	–	700-1000	1
<i>Cutia nipalensis</i>					
White-headed Babbler	–	1	–	550	1
<i>Gampsorhynchus rufulus</i>					
Rusty-fronted Barwing	2	2	–	1200-1600	2
<i>Actinodura egertoni</i>					
Streak-throated Barwing	1	–	–	2200	2
<i>A. waldeni</i>					
Blue-winged Minla	–	3	–	500	3
<i>Minla cyanouroptera</i>					
Chestnut-tailed Minla	–	3	1	900-2300	1,2
<i>M. strigula</i>					
Red-tailed Minla	–	1	–	600	1
<i>M. ignotincta</i>					
Yellow-throated Fulvetta	1	3	–	600-1800	1
<i>Alcippe cinerea</i>					
Rufous-winged Fulvetta	1	2	–	500-1600	1
<i>A. castaneiceps</i>					
Brown-headed Fulvetta	–	1	–	1400	1
<i>A. cinereiceps</i>					
Rufous-throated Fulvetta	1	–	1	500-800	1
<i>A. rufogularis</i>					
Nepal Fulvetta	4	4	4	500-1200	1,3
<i>A. nipalensis</i>					
Rufous-backed Sibia	1	1	–	500-700	1
<i>Heterophasia annectens</i>					
Beautiful Sibia	3	4	3	500-2400	1-4
<i>H. pulchella</i>					

Long-tailed Sibia	3	3	—	150-1100	1,3
<i>H. picaoides</i>					
Striated Yuhina	—	3	1	500-700	1,3
<i>Yuhina castaniceps</i>					
White-naped Yuhina	1	2	—	500-700	1,3
<i>Y. bakeri</i>					
Whiskered Yuhina	3	3	—	500-2300	1-3
<i>Y. flavicollis</i>					
Stripe-throated Yuhina	—	3	—	2100-2400	2,4
<i>Y. gularis</i>					
Rufous-vented Yuhina	—	2	—	500	3
<i>Y. occipitalis</i>					
Black-chinned Yuhina	—	1	—	700	1
<i>Y. nigrimenta</i>					
White-bellied Yuhina	2	3	3	500-800	1,3
<i>Y. xantholeuca</i>					
Black-throated Parrotbill	—	2	—	2200-2500	2,4
<i>Paradoxornis nipalensis</i>					
Greater Rufous-headed Parrotbill	—	1	—	550	1
<i>P. ruficeps</i>					
Grey-headed Parrotbill	—	—	3	500-700	1,3
<i>P. gularis</i>					
Orange-flanked Bush-Robin	—	3	2	900-1600	1,3
<i>Tarsiger cyanurus</i>					
White-browed Bush-Robin	—	1?	—	2400	4
<i>T. indicus</i>					
Rufous-breasted Bush-Robin	1	3	2	600-1800	1
<i>T. hyperythrus</i>					
Magpie Robin	2	3	3	150-600	3,5
<i>Copsychus saularis</i>					
Blue-fronted Redstart	—	2	—	2400	4
<i>Phoenicurus frontalis</i>					
Daurian Redstart	2	3	2	150-600	5
<i>P. aureus</i>					
Plumbeous Redstart	3	3	3	300-1600	6
<i>Rhyacornis fuliginosus</i>					
White-tailed Robin	—	1	—	500	3
* <i>Cinclidium leucurum</i>					
Slaty-backed Forktail	3	3	3	300-1600	6
<i>Enicurus schistaceus</i>					
White-crowned Forktail	1	2	—	500-700	6
<i>E. leschenaulti</i>					
Spotted Forktail	—	2	2	1200-1600	6
<i>E. maculatus</i>					
Stonechat	3	3	3	150-600	3,5
<i>Saxicola torquata</i>					
Grey Bushchat	2	—	—	800	5
<i>S. ferrea</i>					
River Chat	3	3	3	300-800	6
<i>Chaimarrornis leucocephalus</i>					
Chestnut-bellied Rock-Thrush	2	2	—	500-800	3
<i>Monticola rufiventris</i>					
Blue Rock-Thrush	1	—	—	500	3
<i>M. solitarius</i>					
Blue Whistling Thrush	2	3	3	500-1500	1,3
<i>Myophonus caeruleus</i>					

Plain-backed Thrush <i>Zoothera mollissima</i>	-	1	-	1600	1
Long-billed Thrush <i>Z. monticola</i>	-	-	1?	500	1
Chestnut Thrush <i>Turdus rubrocanus</i>	-	2	-	1600	1
White-spectacled Warbler <i>Seicercus affinis</i>	3	3	2	500-1600	1,3
Grey-hooded Warbler <i>S. xanthoschistos</i>	2	2	2	500-1100	1,3
Grey-cheeked Warbler <i>*S. poliogenys</i>	-	2	-	500-700	1,3
Chestnut-crowned Warbler <i>S. castaniceps</i>	-	1?	-	600	1
Black-faced Warbler <i>Abroscopus schisticeps</i>	-	2	-	1600	1
Rufous-faced Warbler <i>A. albogularis</i>	-	2	-	600	1
Broad-billed Warbler <i>A. hodgsoni</i>	1?	-	-	500	3
Inornate Warbler <i>Phylloscopus inornatus</i>	-	1	-	600	1
Ashy-throated Warbler <i>P. maculipennis</i>	2	3	2	500-1600	1,3
Eastern Crowned Warbler <i>P. coronatus</i>	-	1	-	550	1
Striated Warbler <i>Megalurus palustris</i>	2	3	3	150-400	5
Common Tailorbird <i>Orthotomus sutorius</i>	2	3	3	150-700	3,5
Mountain Tailorbird <i>O. cuculatus</i>	-	-	1	800	3
Grey-breasted Prinia <i>Prinia hodgsonii</i>	2	-	2	500-600	3,5
Rufescent Prinia <i>P. rufescens</i>	3	-	2	500-700	3,5
Striated Prinia <i>P. criniger</i>	1	-	-	500	3
Grey-bellied Tesia <i>Tesia cyaniventer</i>	1	2	2	150-600	1,3
Chestnut-headed Tesia <i>T. castaniocoronata</i>	-	2	-	1600	1,2
Brownish-flanked Bush-Warbler <i>Cettia fortipes</i>	2	-	2	500-900	3
Ferruginous Flycatcher <i>Muscicapa ferruginea</i>	-	-	1	1200	3
Rufous-gorgeted Flycatcher <i>Ficedula strophliata</i>	-	3	2	500-1600	1,3
Snowy-browed Flycatcher <i>F. hyperythra</i>	-	1	1	800-1700	1
Little Pied Flycatcher <i>F. westermanni</i>	-	1	-	500	3
Large Niltava <i>*Niltava grandis</i>	1	2	2	500-1600	1,3
Small Niltava <i>N. macgrigoriae</i>	1	2	-	500-800	1,3

Grey-headed Flycatcher <i>Culicicapa ceylonensis</i>	3	3	3	500-800	1,3
Yellow-bellied Fantail <i>Rhipidura hypoxantha</i>	3	3	3	500-1600	1,3
White-throated Fantail <i>R. albicollis</i>	—	3	2	500-800	1,3
Rufous-breasted Accentor <i>Prunella strophhiata</i>	—	3	—	2100-2500	4
White Wagtail <i>Motacilla alba</i>	3	3	3	150-600	3,5
Grey Wagtail <i>M. cinerea</i>	2	3	2	200-1600	3,5
Yellow-headed Wagtail <i>M. citreola</i>	1	—	—	200	3
Olive Tree Pipit / Tree Pipit <i>Anthus hodgsoni/trivialis</i>	—	3	—	500-2400	3,4
Ashy Woodswallow <i>Artamus fuscus</i>	—	—	1	300	5
Grey-backed Shrike <i>Lanius tephronotus</i>	3	3	3	150-1000	3,5
Chestnut-tailed Starling <i>Sturnus malabaricus</i>	3	3	3	150-600	3
Common Myna <i>Acridotheres tristis</i>	4	4	4	150-600	3,5
Jungle Myna <i>A. fuscus</i>	3	3	3	150-600	3
Green-tailed Sunbird <i>Aethopyga nipalensis</i>	—	4	—	1600-2500	1-4
Black-throated Sunbird <i>A. saturata</i>	3	2	—	500-1200	1,3
Streaked Spiderhunter <i>Arachnothera magna</i>	3	3	3	200-600	1,3
Buff-bellied Flowerpecker <i>Dicaeum ignipectus</i>	1	—	—	1000	3
Oriental White-eye <i>Zosterops palpebrosus</i>	—	1	1	500-600	3
Russet Sparrow <i>Passer rutilans</i>	1	2	—	700-2400	3,4
House Sparrow <i>P. domesticus</i>	4	4	—	150-600	5
Dark-rumped Rosefinch <i>Carpodacus edwardsii</i>	—	3	—	2100-2400	4
Scarlet Finch <i>Haematospiza sipahi</i>	—	2	—	500	3
Grey-headed Bullfinch <i>Pyrrhula erythaca</i>	—	2	—	2300-2500	4
Little Bunting <i>Emberiza pusilla</i>	3	—	—	500-700	5

HABITAT CODES 1 - Primary forest, Tropical; 2 - Primary forest, Temperate; 3 - Secondary forest / edge; 4 - Rhododendron / Bamboo scrub; 5 - Jhum / Agriculture / Habitation; 6 - Water body.

ABUNDANCE RANKING (# sightings) 1 - one; 2 - two, three; 3 - four to ten; 4 - ten plus;

* - These species were recorded only through mist-netting. Altitude ranges are based on our observations.